



Baker 18-8

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Patent Application

Applicant(s): A.D. Baker et al.

Case: 18-8

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Examiner: Kwang Bin Yao

I hereby certify that this paper is being deposited on this date with the U.S. Postal Service as first class mail addressed to the Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Signature: *V. Bencivenni* Date: November 3, 2003

Title: Symbol-Based Control of Terminal Endpoints
in a Communication System

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APPEAL BRIEF

Technology Center 2600

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Applicants hereby appeal the final rejection dated May 28, 2003 of claims 1, 2, 4-8, 12, 13, 15-19 and 23-26 of the above-identified application.

REAL PARTY IN INTEREST

The present application is currently assigned to Avaya Inc. or a subsidiary thereof. Avaya Inc. is the real party in interest.

RELATED APPEALS AND INTERFERENCES

There are no known related appeals or interferences.

STATUS OF CLAIMS

The present application was filed on March 19, 1999 with claims 1-26. Claims 1, 12, 25 and 26 are the independent claims.

Claims 1, 2, 4-8, 12, 13, 15-19 and 23-26 stand rejected under 35 U.S.C. §102(a).

Claims 3, 9-11, 14 and 20-22 have been indicated as containing allowable subject matter, and would be allowable if rewritten in independent form.

Claims 1, 2, 4-8, 12, 13, 15-19 and 23-26 are appealed.

STATUS OF AMENDMENTS

There have been no amendments filed subsequent to the appealed final rejection.

SUMMARY OF INVENTION

The present invention is directed to methods and apparatus for controlling a terminal in a communication system. A command symbol is generated that is representative of a plurality of commands in accordance with a terminal protocol supported by a switch of the system. The command symbol is transmitted to a terminal having a valid command space which is less than a full command space of the terminal protocol. The terminal decodes the symbol and executes the corresponding plurality of commands, thereby conserving transmission bandwidth between the switch and the terminal, as well as providing other advantages.

An illustrative embodiment of the invention is shown in FIG. 1 of the drawings, and includes a communication system 100 having an enterprise switch 110. As noted in the specification at page 6, lines 3-19, the illustrative embodiment allows an existing wired terminal protocol, such as a protocol used to control a wired deskset terminal 126 in the system 100, to be extended in a bandwidth-efficient manner to support wireless terminals, such as a mobile wireless terminal 122 of the system 100. An example of a full command space of a terminal protocol used to control wired deskset terminal 126 is shown in FIG. 2 of the drawings, and described in the corresponding text at page 6, line 20 to page 7, line 6 of the specification. An example of a terminal with "a valid command space which is less than a full command space of the terminal protocol" is the wireless

terminal 122 shown in FIG. 3 of the drawings, which can be fully controlled using the reduced command space shown in FIG. 4 of the drawings.

The following portion of the specification at page 1, lines 11-23, with emphasis supplied, indicates that in conventional arrangements, use of a complex multi-octet terminal protocol to control a system terminal presents a number of significant problems:

Communication system switches frequently deploy multifunction voice or voice-and-data terminals which generally require a complex multi-octet terminal protocol to drive the terminal interface and to control transport services. Such a multi-octet protocol is typically field oriented, and may include, e.g., a header field, a command pointer field, a command data field interpreted according to the contents of the command pointer, and an integrity check field. Each field is usually defined as a collection of one or more bits, and certain bits or collections of bits are dedicated to certain functions. This creates fixed relationships between bits and command interpretations. In addition, the deskset terminal design is such that a large number of bits are assigned or reserved for numerous feature keys and feature indicator controls. When such a system is upgraded to support wireless terminals, use of the existing wired terminal protocol is desirable from a switch software point of view, since re-use of the protocol is generally a low-cost implementation. Unfortunately, this conventional approach requires excessive bandwidth, and fails to optimize the control protocol for the wireless voice terminal.

The present invention advantageously solves these problems of the prior art by providing the claimed symbol-based arrangements which allow a system terminal to operate using a valid command space which is less than a full command space of the terminal protocol.

These advantages in the illustrative embodiment are more particularly described as follows at page 3, lines 6-14, of the specification, with emphasis supplied:

The above-described illustrative embodiment of the invention significantly reduces the command field associated with supporting the operation of a wireless terminal using an

existing wired terminal protocol. This results in a proportional bandwidth consumption reduction when communicating over wireless communication channels, thereby preserving this scarce resource. The full functionality of the system, as expressed by the wired terminal protocol, is made available to the wireless terminal to the extent implementable in that terminal. In addition, there is no need to subject the command symbols to bitwise encryption, since their field mapping conventions in accordance with the wired terminal protocol are eliminated during the symbol generation process of the invention.

The present invention thus provides significant advantages over the prior art.

ISSUE PRESENTED FOR REVIEW

Whether claims 1, 2, 4-8, 12, 13, 15-19 and 23-26 are anticipated under 35 U.S.C. §102(a) by WO 97/02670 (hereinafter “Kasslin”).

GROUPING OF CLAIMS

Claims 1, 2, 4-8, 12, 13, 15-19 and 23-26 do not stand or fall together. Instead, claims 1, 2, 4-6, 12, 13, 15-17 and 23-26 stand or fall together, claims 7 and 18 stand or fall together, and claims 8 and 19 stand or fall together.

ARGUMENT

Applicants initially note that §2131 of the Manual of Patent Examining Procedure (MPEP), Eight Edition, August 2001, specifies that a given claim is anticipated “only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference,” citing Verdegaal Bros. v. Union Oil Co. of California, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). Moreover, MPEP §2131 indicates that the cited reference must show the “identical invention . . . in as complete detail as is contained in the . . . claim,” citing Richardson v. Suzuki Motor Co., 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). For the reasons identified below, Applicants submit that the Examiner has failed to establish anticipation of 1, 2, 4-8, 12, 13, 15-19 and 23-26 by the Kasslin reference.

Independent claim 1 is directed to a method of controlling a terminal in a communication system. The method includes the following steps, which are denoted as (a) and (b) herein for ease of discussion:

- (a) generating a command symbol representative of a plurality of commands in accordance with a terminal protocol supported by a switch of the system; and
- (b) transmitting the command symbol to a terminal having a valid command space which is less than a full command space of the terminal protocol, wherein the terminal decodes the symbol and executes the corresponding plurality of commands.

As noted above, the specification at page 1, lines 11-23, indicates that in conventional arrangements, use of a complex multi-octet terminal protocol to control a system terminal is problematic in that it requires excessive bandwidth, and fails to optimize the control protocol for terminals, such as wireless voice terminals, which cannot utilize the full command space of the terminal protocol.

The present invention as set forth in independent claim 1 solves these problems of the prior art by providing a symbol-based approach which allows a system terminal to operate using a valid command space which is less than a full command space of the terminal protocol. More specifically, in step (a) a command symbol is generated that is representative of a plurality of commands in accordance with a terminal protocol supported by a switch of the system, and in step (b), the command symbol is transmitted to a terminal having a valid command space which is less than a full command space of the terminal protocol. The terminal decodes the symbol and executes the corresponding plurality of commands, thereby conserving bandwidth and providing other advantages, as described in the specification at, for example, page 3, lines 6-14. The present invention as claimed thus provides significant advantages over the prior art. As will be described below, the claimed arrangements, and their associated advantages, are not taught or suggested by the Kasslin reference.

The Examiner argues that each of claims 1, 2, 4-8, 12, 13, 15-19 and 23-26 is anticipated by the Kasslin reference. Applicants respectfully disagree.

With regard to independent claim 1, the Examiner asserts that the generation of a DAB packet representative of a plurality of ATM cells in FIG. 4A of Kasslin meets the limitations of step (a) above. Applicants believe that the Examiner is misinterpreting the Kasslin reference on this point. Step (a) calls for generating a command symbol representative of a plurality of commands in accordance with a terminal protocol. There is no particular command symbol in Kasslin that is representative of a plurality of commands in FIG. 4A. Instead, if one were to assume for purposes of argument that the DAB packet of Kasslin comprises a plurality of commands, it is simply the commands themselves that are assembled into the packet. There is no separate generation of a command symbol representative of the plurality of commands.

On page 4, second paragraph, of the final Office Action, the Examiner asserts that “it is assumed that Applicant agrees that the data in [the] DAB packet . . . can be read on the claimed command symbol.” Applicants believe that the Examiner has misconstrued their argument. Applicants argue that a plurality of commands *per se*, such as commands in a DAB packet, cannot read on the claimed command symbol which is representative of a plurality of commands. Both the claim and the specification make it abundantly clear that the claimed command symbol is distinct from the plurality of commands which it represents. To argue otherwise, as the Examiner is attempting to do, in effect gives no patentable weight to the term “command symbol” in the claim. For example, the claim includes the step of “generating a command symbol representative of a plurality of commands.” If a plurality of commands *per se* could be construed as a command symbol, as argued by the Examiner, there would be absolutely no need whatsoever for the generating step. Moreover, the term “command symbol” as described in the specification is generated from a plurality of commands, as an entity separate from those commands, and thus cannot be read on a plurality of commands *per se*. See the specification at, for example, page 6, lines 13-17, which provides as follows, with emphasis supplied:

A mechanism is defined for creating the command symbols, e.g., on the wireless port card in the serving switch, and for decoding and executing them in the served wireless terminal. Note that in the process, individual bits lose their assigned identity in the wired

terminal protocol to that of the generated command symbol, and that overall bit utilization is reduced while performing equivalent command functions.

Applicants note that the foregoing quotation from the specification is intended to illustrate for the benefit of the Examiner one possible command symbol arrangement falling within the scope of claim 1. Applicants are not arguing that the particular elements of this portion of the specification constitute actual claim limitations.

The Examiner further argues that a mobile terminal in the mobile radio network of FIG. 6 in Kasslin has a valid command space which is less than a full command space of the terminal protocol associated with the plurality of commands, and that this terminal decodes a command symbol and executes a corresponding plurality of commands represented by the command symbol, as required in step (b) of claim 1. However, there is no teaching or suggestion within Kasslin to the effect that any particular mobile terminal in the mobile radio network of FIG. 6 has a valid command space which is less than the full command space associated with the information in the DAB packet of FIG. 4A. To the contrary, the reference suggests that the command space of the mobile terminal will be exactly the same as the command space associated with the DAB packet of FIG. 4A, since it will generally be desirable in the Kasslin system for the mobile terminal to be able to utilize any command that may be assembled into the DAB packet of FIG. 4A.

On page 4, third paragraph, of the final Office Action, the Examiner states that “the information on one ATM cell are [sic] assembled into several DAB packets, thus the command space in one DAB packet is less than the command space in one ATM cell.” Applicants submit that this statement misconstrues the notion of command space as described and claimed in the present application. The term “full command space” as used in the context of claim 1 does not refer to the particular commands within any given transmitted packet or cell, as argued by the Examiner, but instead refers to the total set of commands supported by a given terminal protocol. As indicated above, an illustrative example of a full command space of a terminal protocol is shown in FIG. 2 of the drawings, and described in the corresponding text at page 6, line 20 to page 7, line 6 of the specification. Also as indicated above, an illustrative example of a terminal with “a valid command space which is less than a full command space of the terminal protocol” is the wireless terminal

shown in FIG. 3 of the drawings, which can be fully controlled using the reduced command space shown in FIG. 4 of the drawings. The terms “full command space” and “valid command space which is less than a full command space of the terminal protocol” as used in claim 1 and interpreted in light of the specification thus clearly refer to the full set of commands associated with a given terminal protocol and a subset of those commands, respectively. The argument advanced by the Examiner fails to accord proper meaning to these claim terms.

Applicants noted in their previous responses that the Kasslin system, by failing to meet the limitations of steps (a) and (b) of claim 1, does not provide the previously-described significant advantages associated with the claimed invention, such as a reduction in the amount of system bandwidth consumed by commands directed from a switch to a system terminal.

On page 5, first full paragraph, of the final Office Action, the Examiner responds to this point by stating that “a reduction in the amount of system bandwidth consumed by commands directed from a switch to a system terminal” is not recited in the claim at issue. Applicants do not argue that the quoted language is recited in the claim. Applicants instead argue that the quoted language represents an important advantage that results from steps (a) and (b) of claim 1 in an illustrative embodiment of the invention such as that described in conjunction with FIGS. 1 through 5 of the drawings. The fact that the Kasslin system clearly fails to provide this advantage constitutes strong evidence that Kasslin does not anticipate steps (a) and (b) of claim 1.

In summary, there are limitations in independent claim 1 that are clearly not taught or suggested by the Kasslin reference. The §102(a) rejection of claim 1 is therefore believed to be improper and should be withdrawn.

Independent claims 12, 25 and 26 include limitations similar to those of claim 1, and are believed allowable for substantially the same reasons that claim 1 is believed allowable.

Dependent claims 2, 4-8, 13, 15-19, 23 and 24 are believed allowable for at least the reasons identified above with regard to their respective independent claims. Moreover, certain of these claims are believed to define additional separately-patentable subject matter over the Kasslin reference, as outlined below.

With regard to claims 7 and 18, each of these claims requires that a given command symbol specify commands associated with at least a primary switchhook and a test indicator. The Examiner

in the final Office Action at page 3, third paragraph, indicates that this limitation is disclosed in "column 5-8" of Kasslin. Applicants respectfully disagree. Applicants submit that the Examiner has failed to identify with sufficient specificity the particular portions of Kasslin that are alleged to meet the limitation in question. Applicants have been unable to find in Kasslin any teaching or suggestion relating to this limitation. As indicated previously herein, Kasslin does not disclose a command symbol as claimed.

With regard to claims 8 and 19, each of these claims requires that a given command symbol specify commands associated with at least a portion of a command pointer and a command data segment. The Examiner in the final Office Action at page 3, fourth paragraph, again indicates that this limitation is disclosed in "column 5-8" of Kasslin. Applicants respectfully disagree. Applicants submit that the Examiner has failed to identify with sufficient specificity the particular portions of Kasslin that are alleged to meet the limitation in question. Applicants have been unable to find in Kasslin any teaching or suggestion relating to this limitation. As indicated previously herein, Kasslin does not disclose a command symbol as claimed..

For at least the above reasons, Applicants respectfully submit that claims 1, 2, 4-8, 12, 13, 15-19 and 23-26 are patentable over Kasslin. Accordingly, withdrawal of the §102(a) rejection is respectfully requested.

Respectfully submitted,



Joseph B. Ryan
Attorney for Applicant(s)
Reg. No. 37,922
Ryan, Mason & Lewis, LLP
90 Forest Avenue
Locust Valley, NY 11560
(516) 759-7517

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APPENDIX

1. (Original) A method of controlling a terminal in a communication system, the method comprising the steps of:

generating a command symbol representative of a plurality of commands in accordance with a terminal protocol supported by a switch of the system; and

transmitting the command symbol to a terminal having a valid command space which is less than a full command space of the terminal protocol, wherein the terminal decodes the symbol and executes the corresponding plurality of commands.

2. (Original) The method of claim 1 wherein the terminal protocol is a wired terminal protocol, and the terminal is a wireless terminal.

3. (Original) The method of claim 2 further including the steps of:

resizing a command space associated with the wired terminal protocol to generate a reduced command space suitable for use with the wireless terminal;

generating a representation in which a first portion of the reduced command space is correlated with a second portion of the reduced command space; and

assigning command symbols to valid entries in the representation, such that a given one of the command symbols uniquely identifies a particular set of commands in the reduced command space.

4. (Original) The method of claim 2 wherein the wired terminal protocol utilizes a field-based fixed-length packet format including a header portion and a command portion.

5. (Original) The method of claim 4 wherein the header portion includes at least one of a primary switchhook indicator, a secondary switchhook indicator, an extended protocol indicator and a test indicator.

6. (Original) The method of claim 4 wherein the command portion includes a command pointer identifying a category of commands and at least one command data segment identifying a particular command in a given one of the categories of commands.

7. (Original) The method of claim 5 wherein a given one of the command symbols specifies commands associated with at least the primary switchhook and the test indicator.

8. (Original) The method of claim 6 wherein a given one of the command symbols specifies commands associated with at least a portion of the command pointer and the command data segment.

9. (Original) The method of claim 3 wherein the step of generating a representation includes forming a tabular representation in which specific values of bits in the first portion of the reduced command space correspond to columns, and in which specific values of bits in the second portion of the reduced command space correspond to rows.

10. (Original) The method of claim 9 wherein the bits in the first portion of the reduced command space include at least one bit for each of a primary switchhook, a test indicator, and a command pointer.

11. (Original) The method of claim 9 wherein the bits in the second portion of the reduced command space include a plurality of command data segment bits.

12. (Original) An apparatus for controlling a terminal in a communication system, comprising:

a memory, associated with a switch of the system, for storing a set of command symbols, wherein each of at least a subset of the command symbols is representative of a plurality of commands in accordance with a terminal protocol supported by the switch; and

a processor coupled to the memory and operative to direct the transmission of a particular one of the command symbols to a terminal having a valid command space which is less than a full command space of the terminal protocol, wherein the terminal decodes the symbol and executes the corresponding plurality of commands.

13. (Original) The apparatus of claim 12 wherein the terminal protocol is a wired terminal protocol, and the terminal is a wireless terminal.

14. (Original) The apparatus of claim 13 wherein the set of command symbols is generated by resizing a command space associated with the wired terminal protocol to generate a reduced

command space suitable for use with the wireless terminal, generating a representation in which a first portion of the reduced command space is correlated with a second portion of the reduced command space, and assigning command symbols to valid entries in the representation, such that a given one of the command symbols uniquely identifies a particular set of commands in the reduced command space.

15. (Original) The apparatus of claim 13 wherein the wired terminal protocol utilizes a field-based fixed-length packet format including a header portion and a command portion.

16. (Original) The apparatus of claim 15 wherein the header portion includes at least one of a primary switchhook indicator, a secondary switchhook indicator, an extended protocol indicator and a test indicator.

17. (Original) The apparatus of claim 15 wherein the command portion includes a command pointer identifying a category of commands and at least one command data segment identifying a particular command in a given one of the categories of commands.

18. (Original) The apparatus of claim 16 wherein a given one of the command symbols specifies commands associated with at least the primary switchhook and the test indicator.

19. (Original) The apparatus of claim 17 wherein a given one of the command symbols specifies commands associated with at least a portion of the command pointer and the command data segment.

20. (Original) The apparatus of claim 14 wherein the representation comprises a tabular representation in which specific values of bits in the first portion of the reduced command space correspond to columns, and in which specific values of bits in the second portion of the reduced command space corresponding to rows.

21. (Original) The apparatus of claim 20 wherein the bits in the first portion of the reduced command space include at least one bit for each of a primary switchhook, a test indicator, and a command pointer.

22. (Original) The apparatus of claim 20 wherein the bits in the second portion of the reduced command space include a plurality of command data segment bits.

23. (Original) The apparatus of claim 13 wherein the processor comprises a central processing unit of the switch.

24. (Original) The apparatus of claim 13 wherein at least one of the memory and the processor are associated with a port card in the switch of the system.

25. (Original) An apparatus comprising:

a system terminal operative to receive command symbols from a system switch, each of at least a subset of the command symbols being representative of a plurality of commands in accordance with a terminal protocol supported by the switch, wherein the terminal has a valid command space which is less than a full command space of the terminal protocol, and wherein the terminal decodes a given one of the symbols and executes the corresponding plurality of commands.

26. (Amended) An article of manufacture comprising:

a machine-readable storage medium storing one or more programs for implementing a method of controlling a terminal in a communication system, which when executed implement the steps of:

generating command symbols, each of at least a subset of the command symbols representative of a plurality of commands in accordance with a terminal protocol supported by a switch of the system; and

directing the terminal, via a given one of the symbols when transmitted to a terminal having a valid command space which is less than a full command space of the terminal protocol, to execute the corresponding plurality of commands.